

This Class 528 is considered to be an integral part of Class 520 (see the Class 520 schedule for the position of this Class in schedule hierarchy). This Class retains all pertinent definitions and class lines of Class 520

- SYNTHETIC RESINS (CLASS 520, SUBCLASS 1)**
- 1 .FROM PLANT MATERIAL OF UNKNOWN CONSTITUTION
 - 2 ..From cashew material with a sulfur-containing reactant
 - 3 ..From cashew material with an aldehyde or derivative
 - 4 .FROM BORON REACTANT HAVING AT LEAST ONE BORON TO HYDROGEN OR BORON TO CARBON BOND
 - 5 ..Boron reactant contains a silicon atom
 - 6 ..Boron reactant contains a phosphorus atom
 - 7 ..Boron reactant contains a nitrogen atom
 - 8 ..Boron reactant contains a boron atom bonded to at least one atom of oxygen
 - 9 .FROM HEAVY METAL OR ALUMINUM REACTANT HAVING AT LEAST ONE HYDROGEN-TO-HEAVY METAL OR -ALUMINUM BOND OR AT LEAST ONE CARBON-TO-HEAVY METAL OR -ALUMINUM BOND
 - 10 .FROM SILICON REACTANT HAVING AT LEAST ONE SILICON-TO-HYDROGEN OR -CARBON BOND
 - 12 ..Polymerizing in the presence of a specified material other than a reactant
 - 13 ...Material is a boron-containing material
 - 14 ...Material is a metal-containing material
 - 15Material contains a Group VIII metal atom
 - 16Material contains a Group IIIA metal
 - 17Material contains a Group IVB metal atom
 - 18Material contains a Group IVA metal atom

- 19Material contains a heavy metal atom
- 20 ...Material contains an alcohol, alcoholate, or ether compound
- 21 ...Material is a nitrogen-containing compound
- 22Nitrogen-containing silicon compound
- 23 ...Material contains a phosphorus or sulfur atom
- 24 ...Material contains a compound having an O-O group, e.g., peroxide, etc.
- 25 ..With organic silicon-free reactant
- 26 ...Organic Si-free reactant is a carboxylic acid or derivative
- 26.5Reactant which is a fatty acid glycerol ester, a fatty acid or salt derived from a naturally occurring glyceride, tall oil, or a fatty acid derived from tall oil
- 27 ...Organic Si-free reactant contains a heterocyclic ring
- 28 ...Organic Si-free reactant is a nitrogen-containing compound
- 29 ...Organic Si-free reactant is an alcohol or alcoholate
- 30 ..From silicon-containing reactant having at least one polyvalent atom other than carbon, oxygen, or nitrogen
- 31 ..Silicon reactant contains a silicon-to-hydrogen bond
- 32 ..Silicon reactant contains an ethylenically unsaturated group
- 33 ..Silicon reactant contains two or more silicon atoms
- 34 ...With silicon reactant containing a single silicon atom
- 35 ...Silicon reactant contains only carbon atom, only a carbon chain, or chain of carbon and oxygen atoms only between two silicon atoms
- 36 ...Silicon reactant contains at least one halogen atom bonded to a carbon atom which carbon atom is not an acyl halide carbon atom

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| 37 | ...Reactant contains a silicon atom as a ring member of a cyclic compound | 55 | ...Material contains at least one metal atom |
| 38 | ..Silicon reactant contains an amine nitrogen atom | 56 |Material contains a transition metal atom |
| 39 | ..With silicon reactant which is free of any silicon to carbon bond | 57 |Material contains at least one group IA or group IIA metal atom |
| 40 | ..Silicon reactant contains a fused, bridged, or cycloaliphatic ring | 58 |Material contains at least one atom of tin |
| 41 | ..Silicon containing carboxylic acid or derivative or from a silicon derivative of a nonsilicon containing carboxylic acid | 59 | ..From $N=C=X$ reactant having at least two $-C-NH-C(=X)-$ groups |
| 42 | ..Silicon reactant contains at least one halogen atom bonded to a carbon atom which carbon atom is not an acyl halide carbon atom | 60 | ...With reactant compound containing three or more XH , $-C(=X)-XH$, $-NH$, $=NH$, or HNH groups or combination thereof |
| 43 | ..Silicon reactant contains an aryl group | 61 | ...With organic nitrogen reactant which contains two NH , $=NH$, or HNH groups |
| 44 | ..FROM REACTANT HAVING AT LEAST ONE $-N=C=X$ GROUP (WHEREIN X IS A CHALCOGEN ATOM) AS WELL AS PRECURSORS THEREOF, E.G., BLOCKED ISOCYANATE, ETC. | 62 |Organic NH , $=NH$, or HNH nitrogen-containing reactant contains a heterocyclic ring |
| 45 | ..From at least one blocked $-N=C=X$ group | 63 |Organic NH , $=NH$, HNH nitrogen reactant contains at least one halogen atom |
| 48 | ..Process of polymerizing in the presence of a specified material other than reactant | 64 |Organic NH , $=NH$ or HNH nitrogen reactant contains a carbocyclic or aromatic ring |
| 49 | ...Material contains only one $-C-XH$, $-C-C(=X)-XH$ or carbon to $-NH$ or HNH group | 65 | ...With reactant having two $-XH$ groups |
| 50 | ...Material contains compound having a $-O-O-$ group, e.g., peroxide, etc. | 66 |Reactant having two $-XH$ groups contains two or more $-C-X-C-$ groups or two or more carboxylic acid ester groups |
| 51 | ...Material contains a phosphorus atom | 67 | ..From two or more reactants containing $-N=C=X$ groups |
| 52 | ...Material is organic nitrogen-containing compound | 68 | ..With organic compound reactant containing at least two NH , HNH or $=NH$ groups and wherein the reactant composition is devoid of $-C-XH$, $-C(=X)XH$ or anhydride |
| 53 |Organic nitrogen compound contains a nitrogen atom bonded to three atoms or carbon | 69 | ..Reactant contains a single $-N=C=X$ group |
| 54 |Nitrogen compound wherein nitrogen atom is bonded to three atoms of carbon contains a bridged- or fused-ring system, e.g., triethylene diamine, etc. | 70 | ..Reactant contains a fluorine atom |
| | | 71 | ..Reactant contains at least one salt group, e.g., quaternary ammonium salt, etc. |
| | | 72 | ..Reactant contains at least one phosphorus atom |
| | | 73 | ..Reactant contains at least one heterocyclic ring |
| | | 74 | ..Reactant contains at least one bridged- or fused-ring system |

74.5	..Reactant which is a fatty acid glycerol ester, a fatty acid or salt derived from a naturally occurring glyceride, tall oil, or a fatty acid derived from tall oil	90	....Material contains a sulfur atom
		91	....Material contains a boron atom
		92	....Material contains a polyvalent metal atom
75	..Reactant contains at least one ethylenically unsaturated group	93	....Material contains a nitrogen compound
76	..With ether or thioether compound containing at least two -C-X-C- groups	94	....Nitrogen material contains a nitrogen atom as part of a heterocyclic ring
77	...Ether or thioether compound contains three or more -XH groups	95	....Material contains a Group IA metal atom (Li, Na, K, Rb, Cs, Fr)
78	...Ether or thioether contains at least one nitrogen atom other than as a C NH, C=NH, or C-N(H)-H	96	...Phenolic reactant contains a heterocyclic group other than a 1,2-epoxy group per se
79	...Ether or thioether contains a carbocyclic or aromatic group	97	...Phenolic reactant contains a fused-or bridged-ring other than as a 1,2 epoxy group fused to carbocyclic or aromatic ring
80	..With reactant compound containing at least two -C-C(=X)-X-C groups and which compound is devoid of C-NH, C=NH or C-N(H)-H groups	98	...Phenolic reactant contains at least three distinct aromatic or carbocyclic rings or mixtures thereof
81	...Reactant compound which contains at least two -C-C(=X)-X-C groups contains three or more XH groups	99	...Phenolic reactant contains at least one nitrogen, phosphorus, or sulfur atom
82	...Reactant which contains at least two -C-C(=X)-X-C groups contains tertiary nitrogen atom	100	...Phenolic reactant contains a carboxylic acid or carboxylic acid derivative thereof
83	...Reactant which contains at least two -C-C(=X)-X-C groups has been derived from only a dicarboxylic acid or derivative and only a dihydric alcohol or alcoholate derivative	101	...Phenolic reactant contains ethylenic unsaturation or contains a 1,2-epoxy group fused to a carbocyclic ring
		102	...Phenolic reactant contains a halogen atom directly bonded to a nuclear carbon atom of the aryl-oxygen group
84	..With reactant containing at least two -C-C(=X)-X groups	103	...Two or more 1,2-epoxy reactants
85	..With reactant containing at least two -XH groups	103.5	....1,2-epoxy reactant having at least one carboxylic ester group, e.g., epoxidized linseed oil, etc.
86	..FROM PHENOL, PHENOL ETHER, OR INORGANIC PHENOLATE	104	...Two or more phenolic reactants
87	..From 1,2-epoxy-containing phenolic reactant or with 1,2-epoxy-containing reactant	105	...Phenolic reactant contains only one, 1,2-epoxy group
88	...Polymerizing in the presence of a specified material other than reactant	106	...With at least one nonepoxy or nonphenolic reactant
89	....Material contains a phosphorus atom	107	....Non-1,2-epoxy or nonphenolic reactant is an aldehyde or derivative

108	....Non-1,2-epoxy, or nonphenolic reactant is a phosphorus-containing material	119	....Non-1,2-epoxy or nonphenolic reactant contains one or more nitrogen atoms
109	....Non-1,2-epoxy, or nonphenolic reactant is a sulfur-containing material	120	.....Two or more nitrogen-containing reactants
110	....Non-1,2-epoxy, or nonphenolic reactant is an alcohol, inorganic alcoholate, or ether	121	.....Nitrogen reactant contains at least one amino-nitrogen atom
111	.....Nitrogen-containing alcohol, inorganic alcoholate, or ether	122	.....Nitrogen reactant having at least one amino-nitrogen atom contains a cycloaliphatic ring
111.3	....Non 1,2-epoxy or nonphenolic reactant which is a dimer or trimer of an ethylenically unsaturated aliphatic monocarboxylic acid having at least ten carbon atoms; or adduct of said unsaturated monocarboxylic acid with an alpha, beta ethylenically unsaturated carboxylic acid or derivative	123	.....Nitrogen reactant having at least one amino-nitrogen atom contains three or more nitrogen atoms
111.5	....Non 1,2-epoxy or nonphenolic reactant which is a fatty acid glycerol ester, a fatty acid or salt derived from a naturally occurring glyceride, tall oil, or a fatty acid derived from tall oil	124	.....Nitrogen reactant having at least one amino-nitrogen atom contains at least one aryl group
112	....Non-1,2-epoxy or nonphenolic reactant is a carboxylic acid, salt thereof, or carboxylic acid anhydride	125	..From ketone-containing phenolic reactant or with ketone-containing reactant
113	.....With nitrogen-containing reactant	126	...Polymerizing in the presence of a specified material other than reactant
114	.....Nitrogen-containing carboxylic acid, salt thereof, or anhydride, or nitrogen-containing salt of a non-nitrogen-containing carboxylic acid	127	...With nonketone- or nonphenolic-aldehyde or derivative as a reactant
115	.....At least two carboxylic acids, salts thereof, or carboxylic acid anhydrides, or mixtures thereof	128	...With nonphenolic or nonketone reactant
116	....Non-1,2-epoxy or nonphenolic reactant contains a heterocyclic ring	129	..With aldehyde or derivative
117	.....Five-membered heterocyclic ring contains at least one nitrogen atom as a ring member	137	...Polymerizing in the presence of a specified material other than a reactant
118	.....Six-membered heterocyclic ring contains at least one nitrogen atom as a ring member	138	....Material contains a boron atom
		139	....Material contains an aluminum or heavy metal atom
		140	....Material contains a Group IIA metal atom (Be, Mg, Ca, Sr, Ba, Ra)
		141	....Material contains a phosphorus atom
		142	....Material contains an alcohol, inorganic alcoholate, or ether
		143	....Material contains a sulfur atom
		144	....Material contains a carboxylic acid, anhydride thereof, ester thereof, or salt thereof
		145	....Material contains a nitrogen compound

146	.....Nitrogen-containing material contains a nitrogen atom directly bonded to a carbon atom	161	...With at least one reactant which is other than an aldehyde or derivative and which contains a carboxylic acid, anhydride thereof, salt thereof, or ester thereof
147	....Material contains a Group IA metal atom (Li, Na, K, Rb, Cs, Fr)	162	...With nitrogen-containing reactant
148	...Phenolic reactant contains a carboxylic acid or carboxylic acid salt group	163	....Nitrogen-containing reactant is a heterocyclic ring compound containing at least one nitrogen atom as a ring member or is nitrogen-containing aromatic compound
149	...Phenolic reactant contains a nitrogen atom	164	....Nitrogen-containing reactant contains the -N-C(=O)-N- group
150	...Phenolic reactant contains a sulfur atom	165	...Aldehyde or derivative is sole coreactant
151	...Phenolic reactant contains a halogen atom directly bonded to a nuclear carbon atom of the benzene-oxygen group	166	..Aluminum- or heavy metal-containing reactant
152	...Phenolic reactant contains an ethylenically unsaturated group	167	..Phosphorus-containing reactant
153	...Phenolic reactant contains at least two ring moieties (includes fused or bridged ring system)	168	...Nitrogen-containing reactant
154	...Phenol ether	169	...Halogen-containing reactant
155	...Two distinct phenolic reactants or two or more hydroxy groups or phenate groups bonded to nuclear carbon atoms of the same benzene ring	170	..Imide-containing reactant
156	...Two or more aldehydes or derivatives	171	..Sulfur reactant contains sulfur directly bonded to oxygen
157	...Aldehyde or derivative is ethylenically unsaturated	172	...Nitrogen-containing compound is a reactant other than wherein nitrogen is solely present as a carboxylic acid derivative
158	...With at least one nonaldehyde phosphorus- or sulfur-containing reactant	173	...Carboxylic acid or derivative is a reactant
158.5	...With a reactant which is a fatty acid glycerol ester, a fatty acid or salt derived from a naturally occurring glyceride, tall oil, or a fatty acid derived from tall oil	174	...Halogen-containing material is a reactant
159	...With an ethylenically unsaturated reactant	175	....Reactant contains a (O=)S(=O)-halo group
160	...With reactant having only carbon and hydrogen atoms or only carbon, hydrogen, and halogen atoms	176	..With polycarboxylic acid or derivative as reactant
		179	...Polymerizing in the presence of a specified material other than a reactant and other than Group IA or Group IIA material as sole metal atom
		180	....Material contains a metal atom
		181	.....At least one transition metal atom
		182	....Material is a nitrogen-containing compound
		183	...Nitrogen reactant contains at least one amino-nitrogen atom

184	....Nitrogen reactant having at least one amino-nitrogen atom contains a carboxylic acid group or is a derivative thereof	201	...Fused- or bridged-ring-containing reactant other than solely as a polycarboxylic acid anhydride group
185	....Phenolic reactant contains at least two aryl rings and two diverse phenolic to oxygen bonds	202	...Reactant contains a halogen atom other than solely as halogen bonded to a carbonyl group
186	....Nitrogen reactant contains at least three amino-nitrogen atoms bonded to one or more carbon atoms	203	...Reactant contains a nitrogen atom
187	.....At least one reactant contains three or more carboxylic acid groups or is derivative thereof	204	...Two or more phenolic reactants
188	....Reactant contains three or more carboxylic acid groups or is derivative thereof	205	..Ethylenically unsaturated reactant
189	.....Two or more polycarboxylic acids or derivatives or mixtures thereof	206	..Phenolic reactant contains at least one carboxylic acid group or is derivative thereof
190	...Reactant contains a fused- or bridged-ring other than solely as a polycarboxylic acid anhydride group	207	...Polymerizing in the presence of a specified material other than a reactant and other than Group IA or Group IIA material as sole metal atom
191	...Reactant contains a halogen atom other than solely as halogen atom bonded to a carbonyl group	208	...Nitrogen-containing reactant
192	...Ethylenically unsaturated reactant	209	...With nonphenolic compound having at least two hydroxyl groups or salts thereof as reactant
193	...Two or more phenolic reactants	210	..Phenolic reactant contains a nitrogen atom
194	...Two or more polycarboxylic acids or derivatives as reactants	211	..With nitrogen-containing reactant
195	...Reactant is a nonphenolic compound having at least two hydroxyl groups or salts thereof	212	..Phenolic reactant contains a single phenolic -OH group or a single inorganic phenolate thereof
196	..With reactant having halo-C(=O)-halo, halo-C(=O)-O-, or -O-C(=O)-O- group	214	...Polymerizing in the presence of a specified material other than a reactant and other than Group IA or Group IIA material as sole metal atom
198	...Polymerizing in the presence of a specified material other than a reactant and other than Group IA or Group IIA material as sole metal atom	215	....Material is a nitrogen-containing compound
199	....Material is a nitrogen-containing compound	216	....Nitrogen-containing material is a heterocyclic compound containing at least one nitrogen atom as a ring member
200	....Material contains a metal atom	217	....Material contains a metal atom
		218	...Two or more phenolic reactants each of which contains a single -OH group or inorganic phenolate group, or with a compound containing a single ether oxygen atom bonded to two discrete aryl rings

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| 219 | ..Phenolic reactant contains two or more phenolic -OH groups, or two or more inorganic phenolate groups, or mixtures thereof | 245.3 | ..With a polycarboxylic acid reactant which is a dimer or trimer of an ethylenically unsaturated aliphatic monocarboxylic acid having at least ten carbon atoms; or adduct of said unsaturated monocarboxylic acid with an alpha, beta ethylenically unsaturated carboxylic acid or derivative |
| 220 | .FROM KETONE OR KETENE REACTANT | | |
| 222 | ..Polymerizing in the presence of a specified material other than a reactant | | |
| 223 | ...Material contains a phosphorus or sulfur atom | | |
| 224 | ...Material contains a nitrogen-containing compound | 245.5 | ..With a reactant which is a fatty acid glycerol ester, a fatty acid or salt derived from a naturally occurring glyceride, tall oil, or a fatty acid derived from tall oil |
| 225 | ...Material contains a boron or polyvalent metal atom | | |
| 226 | ..With sulfur-containing reactant | | |
| 227 | ..With aldehyde or derivative thereof as reactant | | |
| 228 | ..With nitrogen-containing reactant | 246 | ..Ethylenically unsaturated reactant other than unsaturation solely in heterocyclic ring containing only oxygen as hetero atom |
| 229 | ...Nitrogen-containing reactant contains an amine group | | |
| 230 | .FROM ALDEHYDE OR DERIVATIVE THEREOF AS REACTANT | 247 | ..With hydrocarbon or halogenated hydrocarbon reactant |
| 232 | ..Polymerizing in the presence of a specified material other than a reactant | 248 | ..With heterocyclic reactant which is not an aldehyde or derivative |
| 233 | ...Material contains a metal atom | 249 | ...Nonaldehyde or nonaldehyde derivative heterocyclic compound contains an oxygen atom as a ring member of the heterocyclic compound |
| 234 |Material contains a transition metal atom | | |
| 235 |Transition metal atom is a Group VIII metal atom | 250 |Heterocyclic compound contains a 1,2-epoxy ring |
| 236 |Material contains a heavy metal atom | 251 | ...Nonaldehyde or nonaldehyde derivative heterocyclic compound contains a sulfur atom as a ring member of the heterocyclic compound |
| 237 |Heavy metal is a Group IVA metal atom (Ge, Sn, Pb) | | |
| 238 |Material contains an aluminum atom | 252 | ...Nonaldehyde or nonaldehyde derivative heterocyclic compound contains only two nitrogen atoms as ring members of the heterocyclic compound |
| 239 |Material contains a Group IA metal atom (Li, Na, K, Rb, Cs, Fr) | 253 | ...Nonaldehyde or nonaldehyde derivative heterocyclic compound contains two or more heterocyclic rings and includes shared hetero atoms in a fused or bridged ring system |
| 240 | ...Material contains a boron atom | | |
| 241 |Boron trihalide or organic complex thereof | | |
| 242 | ...Material contains a phosphorus or sulfur atom | | |
| 243 | ...Material contains nitrogen as part of a nitrogen-containing compound | | |
| 244 | ..Fluorine- or phosphorus-containing reactant | | |
| 245 | ..From glyoxal or compound having two or more -C(=O)-H groups per se | | |

254	...Nonaldehyde or nonaldehyde derivative heterocyclic reactant contains a six membered ring having three nitrogen and three carbon atoms as ring members	269	...Nitrogen-containing nonaldehyde or nonaldehyde derivative contains a single organic amine group
255	....Sulfur-containing heterocyclic compound having three nitrogen and three carbon atoms	270	..From aldehyde or aldehyde derivative as sole reactant (includes copolymer of only aldehydes or aldehyde derivatives)
256	....With reactant containing >NC(=O)- or >N-C(=S)- group, e.g., urea, etc.	271	.FROM CARBOXYLIC ACID OR DERIVATIVE THEREOF
257	....With reactant containing at least one noncyclic carbon atom bonded to at least three atoms of nitrogen, e.g., dicyanodiamide, etc.	272	..From di- or higher ester of a polycarboxylic acid as sole reactant, or from a polycarboxylic acid or derivative with a compound containing two or more hydroxyl groups or salts thereof
258	....Six-membered heterocycle is other than melamine per se or methylol derivative thereof	274	...Polymerizing in the presence of a specified material other than reactant
259	..With >N-C(=X)-N< -containing reactant wherein X is a chalcogen atom	275	....Material contains a metal atom
260	...Two or more >N-C(=X)-N< - containing reactants	276	.....Metal atom in elemental form
261	...At least one reactant is a nonaldehyde or nonaldehyde derivative, non- >N C(=X)-N< - containing reactant	277	.....Material contains a transition metal atom
262	....Nonaldehyde reactant, non->N-C(=X)-N< reactant contains a nitrogen atom	278	.....Metal atom has atomic number of 57-71, or 89 and higher
263	.....Non- >N-C(=X)-N< nitrogen reactant is an organic compound containing two or more amino groups	279	.....Material contains a Group IVB metal atom (Ti, Zr, Hf)
264	...>N-C(=X)-N< reactant is other than urea or thiourea per se	280	.....Material contains a Group VIII metal atom (Fe, Co, Ni, Ru, Rh, Pd, Os, Ir, Pt)
265	..Sulfur-containing reactant	281	.....Material contains a Group IIB metal atom (Zn, Cd, Hg)
266	..With nonaldehyde or nonaldehyde derivative nitrogen-containing compound	282	.....Material contains a Group IIIA metal atom (Al, Ga, In, Tl)
267	...Nitrogen-containing nonaldehyde or nonaldehyde derivative contains a nitrile group	283	.....Material contains a Group IVA metal atom (Ge, Sn, Pb)
268	...Nitrogen-containing nonaldehyde or nonaldehyde derivative contains three or more nitrogen atoms bonded to the same carbon atom, e.g., dicyanodiamide, etc.	284	.....Material contains a lead atom
		285	.....Material contains a Group VA metal atom (As, Sb, Bi)
		286	....Material contains a phosphorus atom
		287	...Phosphorus-containing reactant
		288	...Nitrogen-containing reactant
		289	....Final product contains nitrogen atom as a member of a heterocyclic ring
		290	....Sulfur-containing reactant

291	....Nitrogen-containing polyhydroxy compound or salt of a nitrogen-containing polyhydroxy compound	304	.....Aryl-containing carboxylic acid or derivative of an aryl-containing carboxylic acid
292	....Nitrogen-containing polycarboxylic acid or nitrogen-containing polycarboxylic acid derivative	305	....Each of the carboxylic acids or derivatives contains an aryl group
293	...Sulfur-containing reactant	306	...Ethylenically unsaturated carboxylic acid or derivative of an ethylenically unsaturated carboxylic acid
294	....Sulfur-containing polyhydroxy compound or salt of a sulfur-containing polyhydroxy compound	307	...Cycloaliphatic ring-containing reactant (other than aryl)
295	....Sulfur-containing aryl compound	308	...Aryl-containing carboxylic acid or derivative of an aryl-containing dicarboxylic acid
295.3	...Polycarboxylic acid reactant which is a dimer or trimer of an ethylenically unsaturated aliphatic monocarboxylic acid having at least ten carbon atoms; or adduct of said unsaturated monocarboxylic acid with an alpha, beta ethylenically unsaturated carboxylic acid or derivative	308.1	....Polyethylene Terephthalate per se
295.5	...Reactant which is a fatty acid glycerol ester, a fatty acid or salt derived from a naturally occurring glyceride, tall oil, or a fatty acid derived from tall oil	308.2	.....Physically after-treated solid polymer
296	...Reactant contains three or more carboxylic acid groups or is derivative thereof	308.3	.....Processes of preparing
297	...1,2-epoxy containing reactant	308.4	.....In presence of hydrocarbon, steam or water
298	...Fused- or bridged-ring-containing reactant other than solely as cyclic acid anhydride group	308.5	.....At least two claimed distinct temperature or pressure gradients
299	...Halogen-containing reactant other than solely as halogen atom bonded to a carbonyl group	308.6	...Contains terephthalic acid or substituted forms thereof
300	...Polyhydroxy-containing compound or salt thereof having an ether-oxygen atom as reactant	308.7	....Derived from at least two reactants simultaneously containing a C-OH group
301	....Acyclic ether-oxygen compound	308.8	.....Processes of preparing
302	...Two or more carboxylic acid or derivatives or mixtures thereof	309.1	.....At least two claimed distinct temperature or pressure gradients
303	....Ethylenically unsaturated carboxylic acid or ethylenically unsaturated derivative	310	..From imide- or lactam-containing compound, or from an amino-nitrogen containing carboxylic acid, or derivative of an amino-nitrogen-containing carboxylic acid
		312	...Polymerizing in the presence of a specified material other than reactant
		313	....Material contains a phosphorus or sulfur atom
		314	....Material contains a nitrogen atom as a ring member of a heterocyclic ring other than where nitrogen heterocycle is solely part of a lactam ring
		315Material is a nitrogen-containing compound other than a lactam
		316Material is a ketone, aldehyde, or derivative

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| 317 |Material is an alcohol, ether, or inorganic alcoholate | 336 |Polymerizing in the presence of a specified material |
| 318 |Material is a carboxylic acid, acyl halide thereof, ester thereof, or lactone thereof | 337 |Phosphorus- or sulfur-containing reactant |
| 319 |Material contains a polyvalent metal atom | 338 |From at least two dicarboxylic acids or derivatives or mixtures thereof and at least two organic polyamines |
| 320 |Material contains a silicon atom | 339 |From at least two dicarboxylic acids or derivatives or mixtures thereof |
| 321 | ...Phosphorus- or sulfur-containing reactant | 339.3 |Polycarboxylic acid reactant which is a dimer or trimer of an ethylenically unsaturated aliphatic monocarboxylic acid having at least ten carbon atoms; or adduct of said unsaturated monocarboxylic acid with an alpha, beta ethylenically unsaturated carboxylic acid or derivative |
| 322 | ...Imide-containing reactant | 339.5 |Reactant which is a fatty acid glycerol ester, a fatty acid or salt derived from a naturally occurring glyceride, tall oil, or a fatty acid derived from tall oil |
| 323 | ...Lactam-containing reactant | 340 |From at least two organic polyamines |
| 324 |With two or more reactants one of which is a carboxylic acid or derivative and one of which is an organic compound containing at least two amino nitrogen atoms | 341 |Heterocyclic-containing reactant other than cyclic acid anhydride as sole hetero ring |
| 325 |Two or more lactam reactant or with an amino-containing carboxylic acid or derivative of an amino-containing carboxylic acid | 342 |From reactant containing at least three amino-nitrogen-containing groups or with a carboxylic acid containing at least three carboxylic acid groups or derivatives thereof |
| 326 |Lactam reactant contains 3-5 or 12 or more carbon atoms in the lactam ring | 343 |Carboxylic acid containing (C=O)-(C=O) or is a derivative thereof, e.g., oxalic acid, etc. |
| 327 | ...Heterocyclic reactant or a reactant which contains a nitrogen atom bonded directly to another nitrogen atom | 344 |Bridged- or fused-ring-containing reactant other than as anhydride fused to a nonfused- or bridged-ring system |
| 328 | ...From N-C-(C=O)-OH containing reactant or acid derivative thereof, e.g., alpha amino acid, etc. | 345 |Ethylenically unsaturated reactant |
| 329.1 | ...With two or more reactants one of which is a carboxylic acid or derivative thereof which is devoid of an amine group and one reactant which is a polyamine which is devoid of a carboxylic acid group or carboxylic acid derivative group | 346 |Cycloaliphatic ring-containing reactant |
| 330 | ...Cycloaliphatic ring-containing reactant | 347 |Aryl ring-containing reactant |
| 331 | ...Aryl-containing reactant | | |
| 332 | ..With organic amine, or from organic amine salt of a carboxylic acid | | |
| 335 | ...From dicarboxylic acid or derivative thereof and an organic amine, or from an organic amine salt of a dicarboxylic acid | | |

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| 348 |All reactants contain at least one aryl ring | 365 | ..With reactant containing at least one cyclic ether group |
| 349 |Reactant contains three carbon atoms directly bonded to a single carbon atom | 366 | ...Contains a single 1,2-epoxy group |
| 350 | ...From carboxylic acid having three or more carboxylic acid groups or derivatives thereof, and an organic amine, or from an organic amine salt of a tri- or higher carboxylic acid | 367 | .FROM REACTANT HAVING A NITROGEN ATOM DIRECTLY BONDED TO THE CARBON ATOM OF A CARBONYL GROUP, I.E., N-C(=O)- |
| 351 |Polymerizing in the presence of a specified material other than a reactant | 368 | ..Polymerizing in the presence of a specified material other than a reactant |
| 352 |Phosphorus- or sulfur-containing reactant | 369 | ..N-C(=O)-OH containing reactant or ester, salt, anhydride, or acyl halide thereof |
| 353 |Carboxylic acid contains at least four carboxylic acid groups or is a derivative of a carboxylic acid containing at least four carboxylic groups | 370 | .FROM REACTANT HAVING A HALOGEN ATOM OR OXYGEN SINGLE BONDED TO A CARBONYL GROUP, E.G., HALO-C(=O)-, -O-C(=O)-O, ETC. |
| 354 | ..From compound having -C-C(=O)-O-C- group as part of a heterocyclic ring, e.g., lactone, etc. | 371 | ..Polymerizing in the presence of a specified material other than a reactant |
| 355 | ...Polymerizing in the presence of a specified material other than a reactant | 372 | ..Reactant contains a halogen atom directly bonded to a carbon atom of a carbonyl group, i.e., halo-C(=O)- |
| 356 |Material contains a phosphorus or sulfur atom | 373 | .FROM SULFUR-CONTAINING REACTANT |
| 357 |Material contains a metal atom | 374 | ..From mercaptan or mercaptide-containing reactant |
| 358 |Material contains a Group IA (Li, Na, K, Rb, Cs, Fr) or Group IIA metal atom (Be, Mg, Ca, Sr, Ba, Ra) | 375 | ...Two or more mercaptan or mercaptide reactants, or mixture thereof, or with additional reactant-containing sulfur |
| 359 | ...Heterocyclic ring compound is a four-membered ring containing one oxygen and three carbon atoms -C-C(=O)-O-C- | 376 | ...With ethylenically unsaturated reactant |
| 360 | ..From sulfur-containing carboxylic acid | 377 | ..From heterocyclic compound containing a sulfur atom as a ring member |
| 361 | ..From ether, metal alcoholate, or alcohol group-containing carboxylic acid; or from a derivative of a carboxylic acid which derivative contains an ether, metal alcoholate, or alcohol group | 378 | ...Polymerizing in the presence of a specified material other than a reactant |
| 362 | ..From organic nitrile group-containing compound | 379 |Material contains a Group IA (Li, Na, K, Rb, Cs, Fr) or Group IIA metal atom (Be, Mg, Ca, Sr, Ba, Ra) |
| 363 | ..With nitrogen-containing reactant | 380 | ...Heterocyclic reactant contains a ring composed solely of carbon atoms and a single sulfur atom |
| 364 | ..With sulfur-containing reactant | 381 | ..From inorganic sulfur-containing reactant |
| | | 382 | ...Sulfur dioxide is a reactant |
| | | 383 |Polymerizing in the presence of a specified material other than a reactant |

384	.....Material contains a metal atom	406	...Heterocyclic reactant contains at least two heterocyclic rings having oxygen, selenium or tellurium as ring members
385	.....Material is free oxygen, peroxide, air, or ozone		
386	....With reactant containing only hydrogen and carbon atoms	407	....Reactant which is devoid of a heterocyclic ring containing oxygen, selenium or tellurium as ring atoms, contains at least one nitrogen atom
387	...Carbon disulfide or hydrogen sulfide is reactant		
388	...Inorganic sulfur reactant contains at least one metal atom or contains an ammonium ion	408	..Polymerizing in the presence of a specified material other than a reactant
389	...Elemental sulfur is reactant	409	...Material contains a metal atom
390	..From organic reactant containing a -C(=S)-group	410	....Material contains a transition metal atom
391	..From organic reactant containing a sulfur to oxygen bond, e.g., -S(=O), etc.	411	....Material contains a Group IVB metal atom (Ti, Zr, Hf)
392	.POLYMER OF AN ETHYLENICALLY UNSATURATED REACTANT WITH A SATURATED REACTANT	412	....Material contains a Group VIII metal atom (Fe, Co, Ni, Pd, Ru, Os, Ir, Rh, Pt)
393	..At least one reactant contains a three-membered heterocyclic ring having two carbon and one oxygen atoms, e.g., oxirane, etc.	413	....Material contains a Group IIA metal atom (Be, Mg, Ca, Sr, Ba, Ra)
394	.FROM BORON-CONTAINING REACTANT	414	....Material contains a Group IIB metal atom (Zn, Cd, Hg)
395	.FROM ALUMINUM- OR HEAVY METAL-CONTAINING REACTANT	415	....Material contains at least two diverse metal atoms either in the same compound or in different compounds
396	.FROM HYDROCARBON REACTANT	416	....Material contains a Group IIIA metal atom (Al, Ga, In, Tl)
397	.FROM HALOGENATED HYDROCARBON REACTANT		
398	.FROM PHOSPHORUS-CONTAINING REACTANT	417	..Reactant contains a single hetero-atom in a ring and at least three carbon atoms, e.g., oxetane, etc.
399	..Phosphorus reactant contains a nitrogen atom	418	..Reactant contains two or more rings each of said rings having a single oxygen and two carbon atoms
400	..With alcohol or alcoholate reactant		
401	.FROM FLUORINE-CONTAINING REACTANT	419	..Two or more heterocyclic reactants containing rings of one oxygen and two carbon atoms
402	..Fluorine reactant contains a heterocyclic ring having a -C-O-C- group as part of the hetero ring atoms	420	..Reactant has a three-membered ring of oxygen and two carbon and contains a nitrogen atom
403	.FROM HETEROCYCLIC REACTANT CONTAINING AS RING ATOMS OXYGEN, SELENIUM OR TELLURIUM, E.G., EPOXY, ETC.	421	..Reactant has a three-membered ring containing oxygen and two carbon atoms, i.e., 1,2-epoxy
405	..With reactant which is devoid of a heterocyclic ring containing oxygen, selenium or tellurium atoms as ring members	422	.NITROGEN-CONTAINING REACTANT
		423	..Reactant contains nitrogen as a ring member of a heterocyclic ring

424 ...Heterocyclic nitrogen-
containing ring contains a
single atom of nitrogen and
two atoms of carbon as ring
members

425 ..FROM ORGANIC OXYGEN-CONTAINING
REACTANT

480 ..TREATING POLYMER CONTAINING
MATERIAL OR TREATING A SOLID
POLYMER OR A RESINIFIABLE
INTERMEDIATE CONDENSATION
PRODUCT

481 ..Treating at 0 Deg C (32 Deg F)
or below, or at 200 Deg C (392
Deg F) or above

482 ..Contacting with ion exchange
material or solid sorbent

483 ..Contacting with exteriorly
produced specified gaseous
agent other than drying,
blanket, or carrier gas

484 ..Preventing or removing reactor
or processing equipment
buildup

485 ..Contacting with aluminum or
heavy metal material

486 ..Contacting with carboxylic
acid, salt, or anhydride
thereof

487 ..Contacting with sulfur or
phosphorus-containing material

488 ..Contacting with alkali (Li, Na,
K, Rb, Cs, Fr) or alkaline
earth (Be, Mg, Ca, Sr, Ba)
metal or compound thereof

489 ...Oxide or hydroxide

490 ..Contacting with specified
element or with specified
inorganic compound other than
water, elemental nitrogen, air
and the inert gases (Group
VIII A)

491 ..Contacting with organic
material

492 ...Nitrogen containing

493 ...Aldehyde or ketone

494 ...Ether

495 ...Alcohol

496Contains one to four carbon
atoms

497 ...Hydrocarbon

498Acyclic

499 ..Contacting with water

500 ...Steam stripping or steam
distilling

501 ..With distilling or pressured
reduction step to remove
material, e.g., flashing,
autorefrigeration, etc.

502 R ..Physical treatment

502 A ...Filtration

502 B ...Stretching to alter polymer
properties by elongation

502 C ...Compression or pressure
treatment

502 D ...Centrifuge separation

502 E ...Spray drying or atomization

502 F ...Shearing to change polymer
particle size or to change
polymer properties

503 ..Temperature maintaining,
heating or cooling

CROSS-REFERENCE ART COLLECTIONS

901 ROOM TEMPERATURE CURABLE SILICON-
CONTAINING POLYMER

902 PARTICULATE MATERIAL PREPARED
FROM AN ISOCYANATE

903 POLYMERIZING OR PROCESSING AN
ISOCYANATE UNDER SUBSTANTIALLY
ANHYDROUS CONDITIONS

904 ISOCYANATE POLYMER HAVING STATED
HYDROPHILIC OR HYDROPHOBIC
PROPERTY

905 POLYMER PREPARED FROM ISOCYANATE
REACTANT HAS ADHESIVE PROPERTY

906 FIBER OR ELASTOMER PREPARED FROM
AN ISOCYANATE REACTANT

SUBCLASS 950 WILL BE THE GENERIC LOCATION
FOR THE 520 SERIES THAT PERTAINS TO MORE
THAN ONE OF THE INDIVIDUAL SERIES OTHER
THAN THOSE CONCERNED WITH COMPOSITIONS,
E.G., 523, 524, ETC.

950 POLYMERS USEFUL FOR REPLACING
HARD ANIMAL TISSUES, E.G.,
DENTURES, BONES, ETC.

930 GUAYULE RUBBER

- 931 **PHYSICAL TREATMENT OF NATURAL
RUBBER OR NATURAL RUBBER
CONTAINING MATERIAL OR
CHEMICAL TREATMENT OF NON-
RUBBER PORTION THEREOF, E.G.,
EXTRACTION OF RUBBER FROM MILK
WEED, ETC.**
- 932 .Protein removal or conversion
- 933 .Resin removal or conversion
- 934 .Latex
- 935 ..Preserving or stabilizing
- 936 ..Coagulating
- 937 ..Concentrating, e.g., creaming,
etc.

FOREIGN ART COLLECTIONS

FOR 000 CLASS-RELATED FOREIGN DOCUMENTS